

dividing plate is arranged in the vacuum reaction chamber such that the only communication between the plasma discharge space and the film deposition process space is through the plurality of holes.

However, applicants submit that there is no motivation or suggestion to combine the three applied references as proposed by the examiner. *Umotoy* relates to a showerhead arrangement that delivers two different reagents, e.g., titanium tetrachloride and ammonia to a process region 104. In *Umotoy*, the showerhead is not used to separate a plasma generating section from a film forming section below the showerhead. Also, unlike the present invention and *Yuda*, *Umotoy* is not concerned with delivering active radicals from a plasma generating zone to a separate zone. For example, *Yuda* generates a plasma in an upper chamber and delivers the radicals through a mesh plate to a processing zone where a silica oxide film is formed. However, in contrast to the present invention, the "plate" in *Yuda* is actually a mesh electrode 11 which is suspended in the interior of the vacuum chamber. Gases can easily pass around the edges of the electrode 11.

First, applicants submit that *Yuda* and *Umotoy* operate sufficiently differently from each other so that one of skill in the art would not be motivated to combine the references, as proposed by the examiner.

In addition, in contrast to *Yuda*, with the invention of claim 1, beneficial relative pressures can be maintained in the respective portions of the vacuum chamber so that the flow of gases through the dividing plate can be used to effectively control a desired distribution of gases and gas pressures to minimize the likelihood that precursor gases will enter the plasma discharge space. See paragraphs [0025] and [0054] of the present application. As set forth above, *Yuda*

does not teach or suggest such a *dividing* plate, at least as that term is used in claim 1.

The examiner recognizes the deficiency of *Yuda* and *Umotoy*, and has added the teachings of *Beisswenger*. However, contrary to the teachings of *Yuda* and *Umotoy*, *Beisswenger* is not concerned with delivering two different reagents to a processing area and keeping such reagents separate until they reach the processing area. The *Beisswenger* device merely delivers a reactive gas 47 through openings 48 – 54 and draws off the gas in a uniform manner through pipes 39 - 45 so that a uniform coating is achieved. In other words, *Beisswenger* uses the pipes 39 – 45 to **evacuate** the deposition region uniformly. This is quite different from the present invention which uses a plurality of holes to **deliver** active radicals to the film deposition space.

Furthermore, *Beisswenger* is not concerned with maintaining a proper pressure relationship between a plasma discharge space and a film deposition process space. *In fact, none of the three references are concerned with maintaining a proper pressure relationship between a plasma discharge space and a film deposition process space.*

Accordingly, all three references relied upon by the examiner operate in a significantly different manner from each other, and none of the references are concerned with the problems to be solved by the present invention. Thus, it is only with the benefit of hindsight of the present application that the examiner was able to piece together a combination of prior art. The examiner alleges that it would have been obvious to use the seals of *Beisswenger* to prevent gases from escaping upwards. However, it is in part, the recognition of the desirability of maintaining such

pressure differentials between a plasma discharge space and a film deposition process space that is accountable for the present invention. Without this realization, there would have been no motivation to combine the prior art in the manner suggested by the examiner. Accordingly, the rejection is improper and should be withdrawn.

The remarks set forth above with respect to claim 1 also apply to the remaining independent claims.

Claims 4, 5, 8, 14, 20-24, and 26-28 depend from the independent claims and are thus patentable at least for the reasons set forth above.

Accordingly, the Examiner is respectfully requested to withdraw the rejections of claims 1, 4, 5, 8, 9, 14, 15, 20-24, and 26-28.


Claims 10, 11, 16, and 17 have been rejected under 35 U.S.C. 103(a) as allegedly being obvious over Yuda, Umotoy, and USP 5,433,786, hereinafter *Hu*. However, the examiner is relying upon *Hu* simply for its alleged teaching of rivets and fasteners. Accordingly, *Hu* does not otherwise overcome the deficiency of the rejections of the independent claims based on *Yuda* and *Umotoy*. Among other things, none of the three references teach or suggest that the dividing plate is arranged in the vacuum reaction chamber such that the only communication between the plasma discharge space and the film deposition process space is through the plurality of holes. Accordingly, the Examiner is respectfully requested to withdraw the rejections of claims 10, 11, 16, and 17.

In the event that there are any questions concerning this response, or the application in general, the Examiner is respectfully urged to telephone the undersigned so that prosecution of the application may be expedited.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

Date: June 21, 2005

By:   
William C. Rowland  
Registration No. 30,888

P.O. Box 1404  
Alexandria, Virginia 22313-1404  
(703) 836-6620